

BBC NEWS | Health | GM bacteria used to fight cancer

A genetically altered version of the food poisoning bug E.coli could be used to destroy cancer cells, say scientists.

Cancer Research UK experts used a neutralised version of the bacteria to deliver a cancer-killing enzyme directly into the cells.

It provides scientists with a method of breaking through the previously impenetrable barriers around the cells.

In tests using E.coli, over 90% of cancer cells were destroyed.

The bacteria were carrying an enzyme called purine nucleoside phosphorylase into cancer cells.

It works in conjunction with a powerful anti-cancer drug called 6-MPDR. The drug cannot be activated until the enzyme is inside the cancer cells.

When researchers targeted mouse tumours with the bacteria and drug combination , it appeared to slow down tumour growth and cause large numbers of cancer cells to die.

'Efficient delivery'

E. coli bacteria are found naturally in the human gut and only a few strains are harmful.

The research by experts at the Cancer Research UK Molecular Oncology Unit at Barts and the London Queen Mary's School of Medicine and Dentistry used a version of E coli that had been modified so it could no longer grow, divide or cause disease.

Scientists added a gene called invasins, which gives E. coli the power to enter human cells by passing through their outside membranes - which it cannot normally do.

They also added a second gene, called listeriolysin O, which instructs the E.coli bacteria to release the cargo it is carrying once it is inside the cancer cell.

Dr Georges Vassaux, of the Cancer Research UK Molecular Oncology Unit, who led the research, said: "It's notoriously difficult to get some types of therapeutic molecule inside cancer cells, which is why we turned to living organisms to do the job for us.

"With a few important genetic modifications, we were able to turn bacteria into efficient delivery capsules, able to penetrate the outside membrane of cancer cells and protect their precious cargo until safely inside."

He said the therapy may also attack cancer cells a second way.

"We also think that introducing bacteria into a patient's body, albeit harmless, neutered ones, will provoke the immune system and help to direct it against the tumour."

Professor Robert Souhami, Cancer Research UK's director of clinical and external affairs, said: "Developing new drugs tends to grab the headlines, but equally important is the development of new systems to efficiently deliver treatments to cancer cells.

"Using bacteria to treat tumours is an innovative new approach to the problem and may offer the potential to target cancer cells with a range of different therapeutic molecules.

"It could open up exciting new avenues of cancer treatment."